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The Etiology of Tuberculosis

(From the Clinical Aspect.)

By Dr. W. J. Dobbie.

Read before the Academy of Medicine, Toronto, April 5th, 1921.

Heredity.

IN discussing the etiology of Tuberculosis from the clinical aspect, it would appear to be unnecessary to give any consideration whatever to heredity. It may suffice to say that the generally accepted belief is that a child is at birth free from tuberculosis even though one or both parents may have been tuberculous, either at the time of conception or later. And while there may be influences which produce effects in the germinal, embryonic, or foetal periods of ante-natal life "it is very difficult," as Ballantyne (1) of Edinburgh, has said, "to obtain convincing evidence on these matters." "The whole question of germinal infection and its dangers has hardly yet emerged from the purely speculative phase."

Hereditary Predisposition

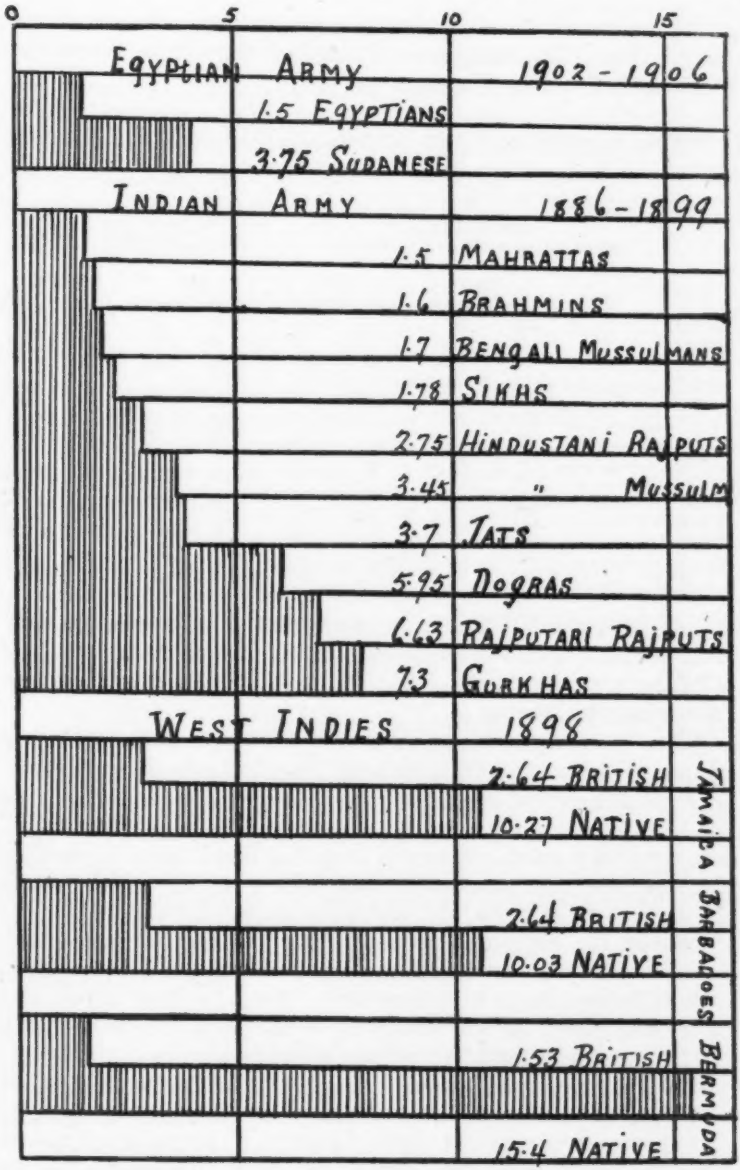
But while heredity itself may, by consent, be thus readily set aside, there is still a prevalent opinion that at least "hereditary predisposition" is an important factor in the etiology of this disease.

Even as early as the time of Hippocrates reference was made to the common association of tuberculosis with certain hereditary physical characteristics. Koch himself held that the inheritance of tuberculosis is explained most naturally by supposing that it is not the infective germ itself, but rather the disposition to tuberculosis which is inherited.

More recently this same idea has been carefully elaborated by Pearson (2), who concludes that "the diathesis of pulmonary tuberculosis is undoubtedly inherited."

In as recent a work as Barker's Monographic Medicine (1920), Elsner (3), states that "What the offspring of the tuberculous parent inherits is a vulnerability, a predisposition, which makes the child ready to develop tuberculosis on slight cause. The susceptibility in other words is greater in the offspring of the tuberculous than in the child coming into the world without handicap."

In this view we cannot now concur. For if it be true that there is such an hereditary predisposition to tuberculosis the incidence and mortality of the disease should be much greater in those races who have lived where tuberculosis is prevalent than in those who have lived where tuberculosis is rare. In demonstrating that this is not the case, but that rather the contrary is true, Cummins (4), of London, shows that "the rarity or absence of clinical tuberculosis amongst isolated tribes, living under conditions of primitive culture is associated with a rarity or absence of the tubercle bacillus." After quoting in this connection, interesting statistics showing the results of tuberculin tests, among which are some by Zieman, graphically recorded, showing the high incidence of infection among those African tribes which have been long associated with Arabs and Europeans as compared with those which have been more isolated, he goes on to say that "it is clear, then, that amongst the members of communities of the kind under discussion there can be no trace of hereditary liability to tuberculosis." Such being the case he proceeds to inquire how the members of these primitive tribes react when exposed to infection by the tubercle bacillus. He reports from investigations made in 1907 that "the Sudanese coming from districts where tuberculosis, either human or bovine, was unknown, showed under military conditions a marked liability to the disease, while the Egyptians, amongst whom tuberculosis has been prevalent since dynastic times, were much more resistent. Further evidence of a similar nature from the native army of India, and the British and African military units in the West Indies is produced.



TUBERCULOSIS INCIDENCE PER MILLE IN DIFFERENT RACES UNDER MILITARY CONDITIONS

In the recent war also, statistics indicate "that there were more deaths from a few companies of Africans than from the whole of the British troops in France, viz.:

TUBERCULOSIS CASES AND DEATHS. 1917-1918 IN THE BRITISH ARMIES IN FRANCE.

	British Troops Average strength over 1,500,000				Cape Boys and Kaffirs. Average strength over 11,000			
	1917		1918		1917		1918	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
January	125	10	157	8	8	1	19	15
February	132	6	117	7	4	2	14	11
March	143	5	96	7	4	4	21	11
April	119	8	107	14	14	..	19	13
May	168	13	125	6	13	..	21	18
June	206	10	135	9	19	7	20	14
July	156	4	117	4	15	7	12	8
August	167	11	124	6	16	8	17	12
September	130	5	62	2	17	5	9	6
October	104	7	71	3	11	14	4	1
November	111	4	62	2	12	7	8	1
December	99	8	48	6	23	14	7	3
Total	1,660	91	1,221	74	156	69	171	113

165 deaths in 2,881 cases amongst 1,500,000 British, or 5.7 per cent. mortality and .012 per cent. incidence, as against 183 deaths in 327 cases amongst 11,000 Africans, or 56. per cent. mortality and 2.9 per cent incidence.

Thus it is demonstrated that both incidence and mortality are greater in those least likely to have inherited a predisposition.

From the clinical standpoint then we may safely say that what has been commonly regarded as an *"hereditary predisposition,"* does not in fact exist, but, as will be shown later, the evidence which has been taken as pointing to *"hereditary predisposition"* has in reality been pointing to "the absence of acquired resistance."

Pearson (6), explains that the theory of inherited resistance is not affected in any way by the fact, that isolated groups of mankind have little resistance to tuberculosis. He says it is rather what we should expect on the theory of evolution by natural selection with the transmission of hereditary characters.

On the contrary, however, Krause (7), of Baltimore, believes that "the little that we know about specific immunity indicates that at some future time it will be found that a cumulative ancestral experience with active tuberculosis transmits increased resistance to the progeny."

THE INFECTION.

In tuberculosis the infecting organism is either the human or the bovine tubercle bacillus. The latter while of considerable importance in the childhood period, is a negligible factor in adult life; the former, on the other hand, is not only the cause of a considerable proportion of the disease in childhood, but is almost the sole factor in adults.

THE SOURCE OF THE INFECTION.

It is now also generally conceded that tuberculosis is a contact disease. It is recognized to be essentially a disease of crowded communities, its prevalence and gravity increasing with the density of the population. The use of the tuberculin reaction has shown that in any populated community about 55 per cent. of the children who have reached the fifth year, and more than 95 per cent. of adults harbour the bacilli.

Raymond Pearl (8), asserts "that a tuberculosis person chosen at random from the working class population will have nearly six times as many blood relatives tuberculous as will a non-tuberculous person taken at random from the same population."

INFECTION AND DISEASE.

Not only is it a contact disease, but it is now indeed generally held that it is usually an infection of childhood. It is in the early years of life that contact with those who are tuberculous is most dangerous. For this there are two reasons: 1, unusual opportunities for infection, and 2, the absence of any marked degree of specific resistance. To appreciate the former of these it is only necessary to recall some of the opportunities there are for the child to become infected, viz.:

(1) Direct contact with adults who are tuberculous;

(2) Contamination through articles of food;

and (3) The habit children have of crawling on the floor and putting the hands and various articles in the mouth.

The extent to which infection with the tubercle bacillus occurs in children is shown both by the tuberculin test and by post mortem examination.

PERCENTAGE OF CHILDREN REACTING TO TUBERCULIN TEST, ADMINISTERED ONCE (NEW YORK).

Age.	Number	Positive		Negative	
		Number	Per cent.	Number	Per cent.
Under 6 months	22	1	4.54	21	95.46
6 to 12 months	34	5	14.71	29	85.29
2 years	39	13	33.33	26	66.67
3 "	36	14	38.89	22	61.11
4 "	44	19	43.18	25	56.82
5 "	51	24	47.06	27	52.94
6 "	55	29	52.73	26	47.27
7 "	45	27	60.00	18	40.00
8 "	45	28	62.22	17	37.78
9 "	40	27	67.50	13	32.50
10 "	43	30	69.77	13	30.23
11 "	35	22	62.86	13	37.14
12 "	44	29	65.91	15	34.09
13 "	35	27	77.14	8	22.86
14 "	20	15	75.00	5	25.00
Total	588	310	52.72	278	47.28

Plate No. 3 is from Fishberg and shows the ages of the children and the number and proportion giving positive and negative reactions. These were given one test only.

In 588 cases the test was positive in 310 cases or 52.72 per cent. and it was negative in 278 cases or 47.28 per cent.

PERCENTAGE OF CHILDREN REACTING TO TUBERCULIN ACCORDING TO AGE PERIOD TEST REPEATED WHEN NEGATIVE (VIENNA).

46	Children	in	the	2nd	year	of	whom	4 of	9 per cent. reacted
56	"	"		3rd	"	"		11 " 20	" " "
75	"	"		4th	"	"		24 " 32	" " "
50	"	"		5th	"	"		26 " 52	" " "
63	"	"		6th	"	"		32 " 51	" " "
46	"	"		7th	"	"		28 " 61	" " "
30	"	"		8th	"	"		22 " 73	" " "
35	"	"		9th	"	"		25 " 71	" " "
26	"	"		10th	"	"		22 " 85	" " "
29	"	"		11th	"	"		27 " 93	" " "
19	"	"		12th	"	"		18 " 95	" " "
17	"	"		13th	"	"		16 " 94	" " "
17	"	"		14th	"	"		16 " 94	" " "
509								271	

Plate No. 4 is from Hamburger, and shows results when the tests were repeated if at first negative. In 509 cases 271 or 53.2 per cent. were positive. It is to be noted, however, that the per cent. increases with the age and after the tenth year it is 85 per cent. or more.

PERCENTAGE OF CHILDREN SHOWING TUBERCULOUS INFECTION ON POST-MORTEM EXAMINATION.

Age	Number of those Examined	Free from Tuber-culosis		Infected with Tuber-culosis		Died of Tuber-culosis	Latent Tuber-culosis	Latent Tubercle Bacilli
1st yr. 1st quarter	82	76		6		4	...	2
2nd quarter	55	46		9		4	...	5
3rd quarter	36	20		16		10	1	5
4th quarter	28	19—80		9—20		6—	2—	1—
	201	161		40		24	3	13
2 years	65	48	74	17	26	14	1	2
3 "	26	18	69	8	31	4	1	3
4 "	18	12	67	6	33	5	1	...
5 "	16	7	44	9	56	8	...	1
6 "	12	2	20	10	80	8	1	1
7 "	13	7	54	6	46	3	...	2
8 "	20	7	35	13	65	6	6	1
9 "	9	3	33	6	67	3	2	1
10 "	11	3	27	8	73	4	4	...
11 "	14	1	7	13	93	7	4	2
12 "	13	4	31	9	69	6	3	...
13 "	13	4	31	9	69	4	5	...
14 "	13	1	8	12	92	4	8	...
15 "	40	8	20	32	80	19	13	...
	484	286	59	198	41	119	52	27
				484			198	

Plate No. 5 is from Harbitz, and shows the frequency of infection in children as revealed by post-mortem examination. Of 484 examined, lesions were found in 198 or 41 per cent. and no lesions were found in 286 or 59 per cent.

INFECTION AND DISEASE.

It is most important throughout the consideration of this subject to keep clearly in mind the difference between *Infection* and *Disease*. In a person who comes in contact with the tubercle bacillus for the first time, there will develop either *immunity* or *disease*—immunity if the dose is not massive, and the power of resistance is good—disease if there be a massive dose or poor resistance or both.

When infection takes place in a child the focus may:

(1) develop rapidly into active Tuberculosis as is commonly the case in very young children.

(2) or it may become quiescent for a time.

(3) or it may heal.

If healing takes place it is accompanied by the development of a degree of immunity which supplies the child with a certain resistance to subsequent infection—a relative immunity of course, varying in different individuals and under different circumstances, leading later if massive infections are encountered to the more resistant types of the disease. If temporary quiesence only is attained there is a recrudesence at a later period in which other factors play a part.

If in a subject not previously infected, the dose has been a massive one, neither healing nor tempoary quiesence occurs, but on the contrary a severe and rapidly developing type of disease ensues which may be either miliary, pneumonic, or meningeal in form and it almost always terminates fatally.

Resistance.

Childhood infection is therefore the keynote to the whole etiology of tuberculosis. Thus far the etiological factors are simple —viz.:—no heredity;

no hereditary predisposition.

but rather infection by contact usually in childhood.

Ordinary contact with the tuberculous is not dangerous as a rule to adults. Formerly it was believed that everything a tuberculous patient handled was a source of danger to others. Brown, Petroff and Pasquera (12), however, studied experimentally the etiological significance of such things as the dust of rooms, eating utensils, contaminated hands, the saliva. the tooth brush, flies, and coughing, and they conclude that "the danger of the dust of rooms in a health resort, from telephone receivers, the danger of eating utensils properly cleansed, the danger from infected hands, through handshaking or from knobs of doors, the danger of transmission from infected flies, at least in guinea pigs, has not been conclusively proved, and these experiments tend to belittle it. On the other hand the danger of transmission of tubercle bacilli by kissing, or the transference of the tubercle bacilli to eating utensils, and thence if not cleansed to a second person has been borne out."

The experiments of Rogers (13) of Cincinnati along similar lines are also of interest.

My own comment in regard to these conclusions would be that, as regards young children, it would be safer to avoid any or all of these possible definite sources of infection. But there are other factors less tangible and more complicated. Why do some who are

exposed survive while others succumb? Entirely on account of *Resistance*. We find, however, that when we come to ask what this resistance is, how it is developed, when it is produced, etc., that numerous difficulties present themselves. What is this Resistance?

Most assuredly there is a factor in Resistance due to an altered capacity of the body cells to react to the products of the tubercle bacilli.

On this Krause (14) is most emphatic. He says, "But with the development of anatomic tubercle other deep-seated changes also take place in the animal body. For twenty years it has been recognized that an animal with tubercle can withstand relatively enormous numbers of living virulent tubercle bacilli as compared with a normal animal. For twenty years and more the details associated with this phenomenon of acquired increased resistance have been studied and the results of these studies may be summarized as follows: (1) The development of anatomic tubercle endows the body with the power to resist greatly increased numbers of tubercle bacilli. (2) This increased resistance to infection manifests itself with the establishment of the first foci. (3) Up to a certain point resistance is direcly proportionate to the extent and severity of the initial disease. (4) With the healing of the diseased foci resistance diminishes. (5) If the animal remains tuberculous the increased power to resist is probably never lost, nor does resistance sink to the level which obtained before the animal was first infected."

The presence of this specific cellular immunity, produced as a result of infection, is the greatest factor in rendering the disease caused by subsequent infections or by metastases chronic in type and its absence is the greatest factor in rendering tuberculosis in infants more fatal than in older children.

Is There Any Danger from Re-Infection from Without?

Some have maintained so strongly that all clinical tuberculosis results from infection in early life, that they have been forced also to hold that it is impossible for a second infection to occur from without. While it is probably true that adults have little to fear from infection from without unless the contact be prolonged, the dose massive, and the carelessness gross, is can hardly as yet be considered proven that it is impossible for a second such infection to occur.

It is in fact, probably true that adults may contract tuberculosis, but in order for this to take place there must be either an absence

of previously developed specific cellular immunity, or extremely massive doses of infection.

Generally speaking, it may be safely said that in this country an adult has little to fear from infection from without, because all have had abundant opportunity to react to frequent small infections and so to develop the necessary relative immunity. What adults have most to fear is the development of metastases within. But this cellular immunity is not all that constitutes Resistance.

The Age Factors.—Infancy and early childhood are the usual periods in which *infection* occurs, and early adult life is usually considered to be the period in which *disease* most usually presents itself. There is, however, a most prevalent misconception as to the mortality of tuberculosis at different age periods, due probably to the practice of comparing the number of deaths from tuberculosis with the number of deaths from all causes. On the other hand, if the deaths from tuberculosis be compared with the number of persons living at any age period it will be seen, as shown by Landis, (26), that "Tuberculosis continues unabated its extensive ravages even among elderly persons." (27). Or as has been concisely stated (28) "in the white population beginning with the twentieth year of life all persons are equally liable to death from tuberculosis."

The Mechanical Factors.

There are also mechanical factors.

Fibrosis.

In every tubercle we have an effort on the part of Nature to build a mechanical barrier by which the invading foreign body may be walled off and rendered innocuous. The degree to which this fibrosis is produced determines the extent to which the body will be free from the toxic effects of the parasite. But in this mechanical protection chance, as Krause has suggested, plays an important role. It is mere chance that a tubercle should have developed in close proximity to a blood vessel, leading suddenly to a pulmonary haemorrhage. It is mere chance that a tuberculous process in a bronchial gland should open into a bronchus resulting in an acute pneumonatic process. It is mere chance that a tuberculous gland should ulcerate into the thoracic duct. In such cases *Resistance* consists entirely of the degree to which fibrosis is sufficient to protect. In the cases cited the degree of protection was slight indeed, but in other cases a similar development of fibrosis, but in a differ-

ent location, may be sufficient to protect the individual from symptoms due to toxic absorption for many years. Shaw (15), of North Dakota, by injecting tubercle bacilli into the blood stream of rabbits with one collapsed lung, found that the lesion developed in the collapsed lung and in no other organ. And he concludes that the collapse of the lung changes the resistance of the animal at the point of collapse, and he askes if this may not be true of atelectatic areas in the lungs, and if pleurisy with effusion may not be the traumatic factor which cause the pulmonary collapse, allowing the subsequent formation of tubercle.

Shaw's results, however, are not confirmed by similar experiments by Corper, of New Haven (16), and his associates, who found that compression of one of the lungs of a rabbit has no visible influence on the number or type of the tuberculous lesions resulting from the intravenous injection of virulent human tubercle bacilli.

Irritants.

Corper (17) also, in a series of experiments to determine the effect of various local irritants found "that regional gland crushing, the subcutaneous injection of turpentine, croton oil, tincture of cantharidin, tincture of capsicum—had no appreciable influence—upon the progress of the infection compared with that obtained in control guinea pigs." Lampblack had a distinct retarding influence, and finely pulverized glass a markedly accelerating influence. He ventures the opinion that these results lend scientific verification to observations made especially by workers in the field of industrial diseases, such as (1) Tnat phthisis is not as common among coal miners as among the ordinary population. (2) That workers in flint or quartz are especially liable to pulmonary tuberculosis.

It may be of interest here to mention, also, the suggestion that sulphur dioxide has some effect in producing an immunity to tuberculosis. Tweedell (18) states that among 11,085 men employed by 29 companies, only 21 cases of tuberculosis were noticed. Of these six were known to be tuberculous before employment, two were suspects only, five followed epidemic influenza, leaving only eight cases to be actually counted. This would give an incidence of only one case in 1,385 persons for this group. Figures such as these, of course, require both verification and explanation.

But here again we arrived at a point where explanations are not by any means so clear. What is it that determines whether

there is to be fibrosis or caseation, degeneration or repair? Is there (1) a Racial Factor! (2) is there a factor due to environment; (3) is there a Constitutional Factor?

Racial Factor.

As to whether or not there is a racial factor to be considered Pearly (19) states it as a "broad general fact that there are wide differences in respect of mortality from tuberculosis among different race stocks living in the same general environment, and in support of this contention he summarizes from Dublin and Baker (20) the following as an example:

Contrast the Italian, with a male mortality at all ages from tuberculosis of 81.5 per 100,000 in Pennsylvania, with that of Irish males in the same state, which reaches the value of 342.8 per 100,000. For the same two race stocks the females show, in the same state, mortality rates of 102.2 and 201.2 per 100,000 respectively." And he concludes that "It is evident that the Irish react to the same environment in a totally different way than do the Italians in respect of tuberculosis." The Irish males have a mortality rate four times as great as the Italian males; the Irish females have a mortality rate twice as great as the Italian females.

Environment.

In considering the influence of environment as a factor in etiology we should include within the scope of the term not only physical surroundings, such as housing, personal, family and municipal hygiene, but the environment of occupations, contact with intercurrent diseases such as measles, influenza, pneumonia and the like, as well as those influences which result from recreations, amusements or dissipations, not to mention those associated with the perpetual struggle for existence or place in life. In all of these, which are the common accompaniments of substandard living, we have at work influences which make for the undermining of general health, and as such they must be conceded to be factors which hinder the formation of the mechanical defence which Nature so much desires, viz., fibrosis. They are, therefore, factors always deserving of recognition in the etiology of clinical tuberculosis. It is in this connection and on this account that we see cases of tuberculosis developing after measles, pneumonia, influenza and the like, or during those years in which the struggle of life is most strenuous. It is a mistake to say that at such periods the disease was

contracted. The infection took place probably years before, the metastases, with the resulting disease *developed* at these times.

Constitutional Factor.

But environment does not seem to satisfactorily explain certain aspects of the problem. Raymond Pearl (21) dealing with this subject observes that "of the two moieties of the infected, those on the one hand who do, and those on the other hand who do not develop the disease in clinically active form, many can be readily shown to have lived under essentially or statistically the same environmental circumstances," and he endeavours to demonstrate that the inherited constitution of the individual is a factor of more than negligible importance.

That this is true we must admit. We do not all react with the same vigour, or to the same degree to anything. It is this indeed which constitutes individuality. On account of it we resist the various general infections differently. And while it is true that the only specific immunity to tuberculosis must be produced by infection by living and virulent bacilli producing a tubercle, we cannot deny that even in this there must be factors peculiar to the individual, a personal equation as it were. Concerning this we know but little, for while the general defensive mechanism provided by the lymphatic system and the cellular elements are in a measure understood, the whole subject of endocrinology, as it relates to tuberculosis, as well as to other diseases, has yet to be investigated. In this connection Webb (22) and his associates as also Heise and Brown (23) have done some experimental work on the relation between the suprarenal function and tuberculosis, and their results tend to suggest that in this disease there is a demand for increased suprarenal function. Pottenger (24) emphasizes the importance of the relationship of the sympathetic nervous system to toxemia and the depressive emotional states in tuberculosis.

It may with reason be said that Calmette's (25) suggestions are entirely worthy of adoption. He holds that since every human being under the present social conditions is exposed from an early age to bacillary infection, it is most necessary that children be kept under strict supervision, so that any recent contamination may be detected and its source determined. The guiding principle in the social campaign against tuberculosis is the protection of healthy subjects, whether infant or adult, against massive or frequent infections.

In conclusion, it must indeed be admitted that the book of knowledge of the etiology of this disease is not by any means as yet closed. Sufficient is already known, however, for guidance in certain practical measures.

As a summary the following may be presented:

(*Table*). *Etiology of Tuberculosis.* (*From the Clinical Aspect.*)

1. No heredity.
2. No hereditary predisposition.
3. Infection by contact, usually in childhood.
4. Disease develops in adult life, from within.
5. Resistance.
   (1) Specific cellular immunity from a tubercle.
   (2) The Mechanical Factor—Fibrosis.
   (3) The Racial Factor.
   (4) The Factor due to Environment.
   (5) The Constitutional Factor.

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The Healthy Child---Our Greatest National Asset

BY HOWARD SPOHN, M.B.

1. Read before the British Columbia Child Welfare Association.—Vancouver, October 1920.

IT affords me great pleasure to have an opportunity of addressing the British Columbia Child Welfare Association. Coming so recently from the East I am not familiar with your work here, and I have been especially interested on this account in your proceedings.

All of us interested in Child Welfare look upon this work as one of stupendous national import. The health, wealth and happiness of the nation as a whole depends on the individual, that is, upon the fitness of the children who must carry on the national affairs of their generation. We, who are interested in this task are masons trying to build a true, strong foundation upon which a lasting superstructure of continued health may be erected.

Healthy children are the product of healthy parents, and need for proper development, to be reared in healthy surroundings on healthy food. To strive to make these requirements procurable for every child is the aim of the Child Welfare and other allied associations. The ways and means through which we hope to attain our end have changed somewhat, but are now settling down into certain definite and approved channels of effort. Some of these I will briefly endeavor to review. Not being familiar with the work that has been done, and is being done in British Columbia, I may be touching on aspects of the situation that have been solved, or, are in the process of being solved. Anything I may offer is not being done as a criticism of work here—it is more a statement of plans I have seen in operation.

Some features which are intimately connected with the development of a healthy child are:—

(1) Absolute necessity of healthy parentage.
(2) Importance of proper nutrition.
(3) The proper organisation and co-operation of all associations interested in the work.
(4) The influence of proper home surroundings.

It has been truly said that the baby's life pathology begins nine months before birth. The great feature in this important epoc is the health of the parents, especially in the mother. Heredity from the purely physical side is something that must always be reckoned with. In order that there may be no unfortunate misunderstandings we should recognize that there are certain mental and physical congenital or birth defects for which the parents are in nc way responsible. Such condtiions as mongolian idiocy and conditions due to obscure defects in internal secretion, should not in any way be looked upon as indications of parental neglect or error. Apart from such obscure and infrequent causes mental and physical deficiencies in the new born are largely due to hereditary taints. The statistics of infant mortality gathered from all sources are appalling. The rate of mortality is extremely high and, of course, varies somewhat according to the community.

In the last five or ten years great things have been done by Welfare and other allied workers for the health and welfare of the child. One great hindrance to the work is that the general public is not sufficiently interested. A large part of the population when appealed to on behalf of this work shrug their shoulders and say they do not understand such matters and are quite content that they should be left in the hands of the medical profession. This is an absolutely wrong view point. To intelligently vote on public questions of the day, we must have some knowledge of these questions. Is it also not fair to expect that those who are to take upon themselves the responsibility of raising and providing for coming generations should have an understanding of the conditions that are injuring the health and increasing the death rate of children? In a talk such as this it is impossibe to approach all aspects of the question, but I want to briefly and frankly discuss some of the conditions which go to produce the healthy child.

It is an acknowledged fact that healthy parents are essential for healthy children. How can we increase the percentage of healthy newborn infants? Nothing to my mind is more important than the possession at the time of marriage of a clean bill of health of both contracting parties. In these days when we hear so much of the cultivation and preservation of fine fruit and livestock, would it not be very much to the point to apply common sense practical methods to the raising of children? If before a parent commits the care and responsibility of his child to another he deems it necessary to inquire into the material prospects of his future son-in-law, why should he not take precautions to safe-

guard the future happiness and health of the coming wife and her unborn children? The churches have encouraged this idea, but so far as I know it has not been officially recognized by any of them. This would not be necessary, however, if every parent would, as a matter of course, demand a physical certificate of health. More can often be accomplished by having the public demand a certain standard, then by passing numerous and sometimes complicated legislative enactments. The figures showing the prevalence of venereal disease are appalling. Their consequences baffle description. Evidences of them are seen on every side, in the home, in the hospitals and in the asylums. There are in the United States alone 75,000 deaths annually from preventable disease. "An ounce of prevention is worth a pound of cure" can fittingly be applied to this work. The problem of preventing venereal disease is a complicated one involving morals, social relations, sanitation and economics. It should be generally known that these diseases are more widespread than tuberculosis and that there follows in their wake unspeakable misery, incalculable economic waste and frequently death. Prudery, false modesty and ignorance should not be allowed to stand in the way of frank and honest discussion. Prostitution is the means by which these diseases may be carried to innocent women and children. Continency is compatible with health and is the best safe-guard against venereal infection.

It is the duty of the medical profession to inform the general public of the dangers of these diseases. The public should know that gonorrhoea is one of the most prevalent of infectious diseases that has certain complications as gonorrhoeal heart disease and gonorrhoeal rheumatism, etc., that a complete cure is essential to safeguard the health of the individual and those with whom he comes in contact, that over fifty per cent. of the gynecological operations or operations especially related to women are caused by this disease; that a great many unfortunate marriages are caused through this agency and that a countless number of women have been sentenced to chronic invalidism through this agency, and that eighty per cent. blindness in infants is due to this disease. In fact that it tends greatly to reduce the standard of efficiency in life.

Syphilis is an entirely different disease, but may co-exist with gonorrhoea. It should be known that syphilis is a general blood infection transmitted with contact and curable only by prolonged scientific treatment. It is a most loathsome and dangerous disease and is transmitted at times as far as the third generation. From eight to ten per cent. of the population are infected. Many diseased

children are born as the result and the mortality in such children ranges from fifty to eighty per cent. It is responsible for one-fourth of all cases of insanity and untreated leads always to business incapacity, inhereted diseases, insanity or death. The consequences of such infection can be emphasized by the following typical summary of an authentic case in the life of an important member of a community. "He developed general paralysis at fifty, only one of his sons reached manhood, his only daughter was a chronic invalid and his wife wondered at the puniness of his grandchildren."

In connection with this all-important question, no factor is more important than the establishment of a pre-natal clinic in connection with every well organized general hospital. Through this important agency treatment can be given during the pre-natal period and through this the mother may be able to give birth to a healthy child, or at least to a child that has a much better chance of surviving. After birth the child can be immediately passed on for treatment in the hospital or through the hospital clinic.

It is not sufficient for a child to be born healthy; we must strive to keep it healthy. Proper feeding is the most important factor in the early life of each individual. There is no real substitute for breast milk and it is therefore the duty of every mother to nurse her baby if at all possible. Welfare workers, well baby clinics, etc., should emphasize this necessity to all mothers with whom they come in contact. Statistics from numerous countries vary somewhat, but a general survey establishes the following averages. About one-fourth of all deaths in infancy occur during the first year of life. Of these deaths forty per cent. are due to gastro-intestinal or disturbances due to improper nutrition. In Ontario nearly 7,000 babies under one year of age die annually. That is nearly 7,000 homes are bereaved annually. How does the breast-fed baby fare in this battle for existence? Statistics gathered from all over the world show that the breast-fed child has from four to five more chances of surviving than the artificially fed. If it were possible to have two children with identical physical characteristics and to bring up one on breast milk and the other on artificial food, the breast-fed child would always be a better physical specimen.

Twenty years ago more mothers were nursing their babies than at present, but in America and elsewhere the benefit of the Welfare and Hospital work is beginning to tell, for the number of breast-fed children is increasing and the period of nursing is lengthening. It has been estimated that from sixty to eighty per cent of all mothers

can successfully nurse their children. Pinard in France, under war conditions, maintained 100 per cent. efficiency with nursing mothers. This percentage is not being maintained in many countries including Canada. Figures show that the well-to-do are nursing their babies less frequently than the poorer classes. This is obviously a condition which should not exist. The failure of mothers to nurse their children is due to the following causes:—

(1) Physical inability which may be inherited and over which the mother has no control.

(2) Improper instructions by the physicians as to the importance of nursing and the methods of establishing and maintaining the breast supply.

(3) Improper methods of living and dress during pregnancy and the lactated period.

(4) Indifference on the part of the mother.

(5) Poverty, with lack of proper nourishment and good hygenic surroundings. The last condition is a disgrace to any country. Infant life is too valuable for any country to permit the nursing mother to ween her child through poverty or necessity. In Ontario the mother cannot wean her baby until the eighth month. This is a necessity and still in many cases a hardship on the mother who has to earn the livelihood. Is it not unfair for example, to ask the mother of an illegitimate child, deserted by the father, to continue to nurse her offspring and earn her own living? Surely all of us must unceasingly impress on the public and those in authority the necessity for mothers pensions. Is it not fair to ask that the illegitimate child should receive the name of his father and that the responsibility for maintenance and education should rest equally on the shoulders of both parents? This would encourage these mothers to properly nurse and care for their unfortunate children and give them a decent start along what is usually a very rough road.

If a child is not breast-fed, its feeding should be supervised in a Well Baby Clinic. If it is not a normal child it should be treated through a hospital clinic. In my opinion it is essential to separate the treatment of well and sick infants. No sick baby should go to a Well Baby Clinic or the aim to keep the infant well is frequently defeated. Hospitals are for the sick and not for the well. Normal infants and many children not acutely ill often are much more successfully treated in the home than in a hospital and Welfare workers can do much to supervise these homes and provide foster homes for illegitimate and neglected children. Fresh air, sunlight

and proper surroundings are necessary for the health of the child. The Welfare Association can aid materially in securing these things for unfortunate children. Playgrounds for recreation are necessary to keep the active young minds in the right channels and proper direction and encouragement can be given by volunteer welfare workers.

Educational measures such as special classes for mentally deficient and mentally backward children, special outdoor schools for tuberculous children, organizations such as the Big Sister Movement, the Little Mothers' League, etc., all have their fields of action but are all co-related to the one general idea of producing and maintaining healthy children. Most of our female colleges are offering a splendid course of instruction in music, economics and household science, but not enough instruction is given to girls to help them in taking their places in society as wives and mothers.

I have enumerated some of the essentials. How is the work to be carried out? This can be done most efficiently by some central body, such as a department of child hygiene working in close co-operation with all interested bodies. Pre-natal and well baby clinics, welfare and public health nurses should be closely associated under one central body and should work hand in hand so that there may be no paralleling of effort. In co-operation with these trained workers your Welfare organization can educate the public and raise funds for necessary expenditure. In your coming elections how many of your candidates have considered this question of sufficient interest to state their views on it? Have you ascertained what branch of the work at present needs your particular attention and support? Efficiency and unification of effort can only be attained by centralization and co-ordination. Have you a sufficient supply of trained municipal nurses? If not, who is to approach your Municipal Government to secure them?

Before closing I would like to discuss one branch of the work which interests me intensely. This is the proper absorption by the community of neglected infants and children. Mortality statistics of infant homes, creches and asylums, the world over do not provide pleasant reading. Even in the best conducted of such institutions the mortality is extremely high. Every child needs a home and home care. This is not always possible but how many more little ones could be made happy and healthy if they could be taken out of institutions and given a little mothering? I do not wish to cast any reflections on these very necessary and usually efficient institutions, but only wish to emphasize the fact that every child de-

velops better in its home surroundings. Is the general public aware that through advances in medical science assurance can be given, after examination, that an infant is free from tuberculosis, syphilis or gonorrhoeal infection? Mental tests can also be carried out so that the individual adopting or caring for a child may feel safe in taking such a child into their home and family life. In my opinion, given a healthy child, one can through proper environment eliminate to a great degree so-called parental instincts that are not desirable. The child will grow and develop physically and mentally in direct proportion to the care expended on its physical and mental training. A few years ago I was fortunate enough to be associated with a hospital in New York that had a boarding out Department in which nearly eight hundred babies were placed and provided for in foster homes. These children were first admitted to the hospital for physical examination and tests, then foster homes or homes of adoption were located. The infant is placed in a foster home only after a social report on the mother and her home. Every week the child is examined by a Social Service nurse from the hospital. In case of illness the woman must bring the child at once to the hospital. The baby is clothed from the hospital stores and the foster mother paid by funds provided by the hospital corporation. In cases where the mother nurses the baby in addition to her own, she receives additional recompense. In this way the little unfortunate receives home care under hospital and social care supervision. These foster mothers frequently become so attached to these infants that they request leave to adopt them. You would perhaps be surprised to learn that four of the wealthiest children in New York can be found in one home, foster children of a wealthy public spirited woman. How many of you are aware that to-day there are several little infants in the children's department of your own city hospital awaiting adoption? Can any more patriotic work be done?

Words fail to express the admiration one must have for the women who will take into their homes and hearts these helpless little atoms who appreciate and yearn for the necessities and advantages of life just to the same extent as do our own children in their comfortable homes. Providence never intended that any class of children should have a corner on health and happiness. Are we all doing our utmost to spread health and happiness broadcast to the children of British Columbia?

Could one suggest any better work for one of your local Associations than providing foster homes or foster parents for all such children that are admitted for this reason to the infants' depart-

ment of your hospital? Perhaps you are doing this now. If not, could it not be undertaken? Such a movement will need funds and will entail much personal sacrifice, but I am sure the Superintendent of the Infants' Hospital will give you her sympathetic support and hearty co-operation. This is not a mere lofty suggestion; it is a practical work that is being carried out from day to day. Those who undertake it will be recompensed by receiving the great blessing of the child's thankfulness and by the satisfaction that they are materially aiding in a good national undertaking.

Provincial Public Health Nursing in Manitoba

BY ELIZABETH RUSSELL, R.N., *Superintendent of Public Nurses, Province of Manitoba.*

PUBLIC Health Nursing in Manitoba is carried on in the city of Winnipeg by special groups of nurses under different organizations, both public and private, and outside of Winnipeg, throughout the Province, under the direct supervision of the Provincial Board of Health.

The Public Health Nurses of the Provincial Board of Health combine all the special fields of public health nursing, except Industrial Nursing.

Approximately half of the province is covered by 50 Public Health Nurses, who are responsible for one or more municipalities.

With regard to qualifications, the Provincial Board of Health has endeavoured to give public health training to nurses of the staff by annual lectures, and from one month to six weeks' field work according to previous experience, before being assigned to a district.

Inasmuch as this is the era of preventive medicine, the sphere of its activities should be where the forces of prevention can exercise their earliest, most potent, and most lasting influences, i.e., in the home and the school.

Where the child lives and forms its habits of body and mind, is the proper place, and childhood the fitting time to teach the habits of health. To bring to mothers the knowledge that children should live and grow to become healthy citizens; to teach the child when it has come to years of understanding, how to recognize the enemies of its child-life, and how to avoid them—these are our aims.

This, after all, just spells education. Recognizing this, the Board of Health of the Province determined to bring the needed education on this most important phase of nation-building, to every school, every home, and every child in Manitoba.

In 1916, we began and completed the experimental stage of this work with a staff of five nurses. The experiment has proved a great success, both in its discovery of the great need of such work and in the warmth of its popular reception.

We have since increased our staff which now numbers 50. The number of nurses actually required to completely cover all sections of the Province would be about 80, and, it is our aim to have this number in the near future.

PUBLIC HEALTH NURSING.

1. *The Work of a Public Health Nurse.*

(a) *Pre-Natal and Post-natal Work.*

Instruction to Mothers—in the homes and at Child Welfare Stations. As the Public Health Nurse becomes known in her field and wins the confidence of the mothers, the prospective mother becomes very ready and anxious for advice. The instruction given includes:

(1) Hygiene of pregnancy and early infancy.

(2) Preparation for confinement. To urge:

(a) Complete physical examination as early in pregnancy as possible, to include examination of heart, lungs, abdomen and urine, and the taking of blood pressure.

(b) Internal examination and pelvic measurements before the seventh month in primipara.

(c) Examination of urine every four weeks during the early months, at least every two weeks after the sixth month.

(d) Necessity of arranging for adequate medical and nursing care during confinement.

(e) Birth registration.

(3) Value of breast feeding, stressing its importance during at least the first six months.

(4) Technique of nursing.

(5) Technique of bath, sleep, clothing and ventilation, and general care of the baby with demonstrations.

(6) Preparation and technique of artificial feeding.

(7) Dietary essentials and selection of food for infants and older children.

(8) Prevention of disease in children.

The names of babies whose births have been registered, are obtained regularly from the registrar of the municipality.

(*b*) *Child Welfare Work.*

(1) In the homes by advice and demonstration to mothers in care of children.

(2) At meetings of mothers.

(3) At Child Welfare Stations.

(4) By health exhibits.

(c) *Health Inspection in Schools.*

(1) Individual examination.
(2) Individual instruction to pupils.
(3) Class room inspections.
(4) Class room health talks.
(5) Health crusades.

Purpose—1. To promote good health habits among the school pupils.
2. To spread knowledge concerning the cause and prevention of disease.

The Health Crusades help the school pupils to acquire health habits by introducing the play element into the study and practice of hygiene. Besides giving the pupils something to do and honours to earn, the approved system of learning health habits by doing them—is given practical application following the health talks. The Health Crusade is carried on by observing the Health Chores, and other detailed Health Rules which in the opinion of the nurse seem advisable.

(6) Little Mother's Leagues.

These classes are organized in all town and city schools for girls in eight grades. Special classes are formed for girls thirteen years and over, in the primary grades.

(7) Nutrition Classes.

Nutrition Classes are organized in schools where the Nurse can make frequent visits to conduct such classes. They are organized in groups of children according to development, who are found to be suffering from malnutrition. The co-operation of teachers, parents and the children is enlisted that each pupil may profit from the instruction and care given to increase his weight.

(8) Visits to homes to urge and assist in arrangements for having defects remedied.

(9) Inspection of Schools for unsanitary conditions.

(d) *Communicable Disease Work.*

(a) Discovering, reporting to the Health Officer, and instructing families where communicable disease exists, including tuberculosis. The Nurse, while in the home or district where communicable disease exists, gives such instruction to both the patient and the other members of the household as may be necessary for their care, safety and future welfare. Where venereal disease clinics are established, nurses are assigned to assist in carrying on the work of such clinics.

(b) Tuberculosis Visiting.

1. To discover undiagnosed and suspected cases of tuberculosis.

2. To instruct patients in the care and prevention of the spread of the disease.

3. To advise as to arrangements for sanatorium care when recommended by a physician.

4. To arrange for satisfactory care of patients when recommended to continue treatment at home, under the care of the physician.

(a) By seeing that patients have proper amount and kind of food, fresh air, clothing, rest, and sanitary supplies for their prescribed routine.

(b) To find out if their road to cure is blocked by household worries.

(c) To encourage them in carrying out the routine treatment.

5. To follow up discharged cases from the sanatorium in order to prevent the breaking down of arrested cases.

6. To have a knowledge of all the available medical, institutional and social resources that can be used to prevent the development of new cases in families of the tuberculosis patient.

To keep under supervision any cases that are found to be active.

(c) Venereal Disease Nursing.

1. To attend clinics established for the treatment of venereal diseases.

2. To such follow up work in the homes and hospitals as may be necessary.

3. To work in conjunction with social agencies for the welfare of patients and the community.

(d) Duties of Public Health Nurses in time of epidemic of communicable diseases is as follows:

1. To be responsible for teaching volunteer nurses.

2. To be responsible for nursing service either by:

(a) Direct supervision in visiting nursing.

(b) Direct such nursing activities from a central agency.

(c) To co-ordinate activities in co-operation with other relief agencies.

To report all cases of suspected communicable diseases to the Health Offiicer, and according to the number of cases, each nurse decides whether or not she is able to cover the work of personal visiting of patients or to direct such nursing activities from a central station.

Wherever posssible, the Public Health Nurses are expected to organize Home Nursing Classes for the untrained women of the community. In order to do this, the co-operation of the Women's Organizations, i.e., Women's Institutes, Women's Section of the Grain Growers, Local Council, and Local Red Cross Society are sought.

(*e*) *Nursing Care Given in Homes*—(1) To demonstrate. (2) In emergency. (3) In time of epidemic.

Duties of the Public Health Nurse include:

To discover, correct or present any insanitary or social conditions detrimental to the health and welfare of the community, and symptoms of disease and physical disability—in co-operation with parents, physicians, dentists, hospitals and municipal officers, and other welfare organizations.

To educate citizens and organizations of the community by lectures in Home Nursing, First Aid and other health topics, literature, exhibits and health conferences. Parents, by instruction and demonstration in the homes, emphasizing the prevention of disease and physical disability. Children, by school room talks, Little Mother's Leagues, First Aid Classes, Health Crusades and Nutrition Classes.

It would appear from the foregoing that the work of the Public Health Nurse is practically all educative in its character, actual bedside nursing being undertaken only in time of epidemic, in an emergency and to demonstrate nursing care to another member of the household.

Cases are, however, constantly being brought to our notice, which indicate the dire need of nurses in outlying districts, where there is no physician. To meet this need, a branch of Public Health Nursing has been organized called Public Service Nursing. At the present time the Manitoba Division of the Canadian Red Cross Society are financing this work, the Board of Health assuming the entire control and direction of the nursing staff. These nurses have the time to give help, especially to the mothers and children in those remote places who so greatly require it, and who suffer many hardships as the result of the lack of such attention.

Public Service Nursing for District Where Medical Service is Unavailable.

The following schedule of activities is only a catalogue of things which a nurse so situated may properly do. The nurse shall care for the sick, and be prepared to handle emergencies whenever they

arise. When she is not caring for the sick, she may properly carry on educational work in the schools and community.

ACTIVITIES.

a) Public Service Nursing.

(1) Answer all emergency calls.

(2) Answer all night calls when escort is provided.

(3) Home to home bedside nursing.

(4) Assist or take charge of obstetrical cases as may be necessary.

(5) First Aid surgical dressings and treatment to patients at Nurse's residence as may be deemed advisable.

(b) Public Health Nursing.

When there is no Health Officer.

(1) Investigation of sources of all communicable diseases.

(2) Take all throat cultures for release of diphatheria cases and carriers.

(3) Assist in quarantine and supervision of communicable diseases.

(4) Report to Superintendent of Public Health Nurses all cases of communicable diseases and insanitary conditions.

(5) To make use of Provincial Board of Health Labatory for bacterial analyses.

(6) Where no Public Health Nurse is appointed, all of the duties of a Public Health Nurse.

When a Public Health Nurse is also working in the community, co-operation to be affected to obtain the most satisfactory results.

Such co-operation is necessary to carry on work in:

(a) Child Welfare.

(b) Prevention of Communicable Diseases.

(c) Instruction on Health Education, Home Nursing, and First Aid, Little Mother's Leagues, etc.

(c) Social Service Work.

To co-operate with and secure aid from Social Agencies, when medical social problems arise.

The radius of the districts which the nurse may be expected to cover is from 15 to 20 miles from nurse's residence.

2. *Area.*

A Public Health Nurse works in one or more municipalities according to the number of school population, which is usually not more than one thousand pupils, and the area to be covered.

3. *Transportation.*

The progress of the nurse's work varies according to the facilities for transportation, that are provided for the nurse in rural district. The best results are obtained where the nurse has independent transportation.

The municipalities may arrange for either of the following means:

1. To arrange with each school board to provide and be responsible for the payment of transportation, for the nurse while in each school district.

2. To provide independent means of conveyance for the nurse, either by providing a horse and buggy, or a motor car. The Board of Health pays for the feeding and stabling of the horse, and pays for gas, oil, storage and minor repairs for a car.

4. *Cost.*

The cost to the Government of maintaining a nurse in a district is approximately $2,000 yearly. This amount includes salary of the nurse, transportation expenses, First Aid supplies, and records used in connection with Inspection of School Children. It does not include permanent equipment used by the nurse in her work. Up to the present time the charge against a district employing a nurse, has been $1,000 yearly, $500 from the municipality and the same amount from the Joint School Board.

It has been found desirable, if possible, to arrange that the municipality assumes the payment for itself and the schools; and levy on the latter as needed, the Board of Health in the meantime paying the salary of the nurse, and sending in a bill and statement every three months to the municipality.

5. *The Appointment and Supervision of the Nurse.*

The Board of Health makes the appointment of the nurse, supervises her work and reserves the right to make such changes as may from time to time be advisable and necessary. The nurse keeps a daily report of work done which is sent weekly to the Superintendent of Nurses. All reports of the nurse's work are sent monthly from the Board of Health to the municipal council, school board or any other organization employing a Public Health Nurse.

6. *How a Public Health Nurse is Secured for a Municipality.*

The work of the Public Health Nursing Service needs only demonstration to show its benefit to a community. Therefore, the Board of Health sends a demonstrating nurse for a period of one to

two weeks, upon request. After such demonstration, the municipal council or school board resolves whether or not to employ a nurse.

If a decision is reached to inaugurate the Nursing Service, application is made to Dr. M. S. Fraser, Corresponding Secretary of the Provincial Board of Health, Winnipeg, thereupon a nurse is engaged and given such training as may be necessary to qualify her to carry on the work.

7. *The Qualifications of a Public Health Nurse.*

The Provincial Board of Health have passed the following regulations re qualifications of a Public Health Nurse and salary schedule which is to be in force on and after May 1st, 1920.

The initial requirements of all Public Health Nurses shall be:

(a) All applicants must be graduates of a recognized training school, which provided not less than a three years' course in surgical, medical and obstetrical nursing.

(b) Two years' High School or its equivalent.

(c) A registered nurse, or eligible for registration.

The applicant for appointment shall be on probation for three months before being transferred to the regular staff.

The applicant, after satisfactorily completing her probation term, shall receive appointment by Order-in-Council. Such Order-in-Council shall be a guarantee to the Board of Health that the nurse will remain on the staff for a period of at least nine months from date of appointment by Order-in-Council.

Social Background

Toronto Neighbourhood Workers' Association

REPORT FOR YEAR 1920-21.

DIVISION OF FAMILY WELFARE.

A mere tabulation of statistics fails to give an adequate picture even of the work done, and rather ignores aims and ideals. This year, on account of the emergency employment work, it is especially difficulty, as many families counted in the unemployment report were previously known to the organization, and some of them during the last year. In order to make a complete yearly report 75 have been listed in both reports. *The total number of families, excluding duplicates, is* 3,547. *The report of work done for unmarried mothers is given elsewhere.*

In our regular work we were interested in 2,196 *families in comparison with* 1,408 *last year.* For some of these we acted as a clearing house, and another agency assumed the supervision of the family. For many, however, the office assumed a larger measure of responsibility, and in some instances full responsibility. On the whole, most pleasant relations have existed between the district secretary and the co-operating agencies. In some of the districts where there are few social agencies, interested people have become excellent friendly visitors, and we feel specially indebted to these who have given their time so generously.

From the Department of Public Health, as in previous years, come the greater number of the families referred to us—almost 50%. There has been decided increase in personal applications. The nationalities represented show quite a cosmopolitan clientiele though the proportion of foreigners is not large, and English and Canadian comprise almost two-thirds of the total.

It is always difficult to tabulate just what has been done for the family, but our long list of services rendered suggests that something has been done. *We have tried to show in dealing with a family situation that where relief was necessary, it was merely a symptom of some more deep-seated trouble, and have tried always to keep in mind that the family have a past, a present and a future.*

Field Work for Student.

One of our pleasant experiences was the supervision of field work for social workers in training. Last summer the nurses from the Provincial Department of Health and Red Cross, who were being sent to different parts of the Province as Public Health Nurses, were with us for a short time. We had, also, the student nurses from the Victorian Order. We hope we were able to give them a better insight into our work, and we certainly learned much more about theirs, and this getting to know each other better is one of the ends to which we are constantly striving. From the Social Service Department of the University we had 23 students in all, 8 receiving their assignments from the Central Office and 15 in the district offices gaining experience in emergency work.

Inter-city Work.

One part of our work that possibly is not well known is what we call our out-of-town investigations. As a member of the American Association for Organizing Family Social Work, our name appears in the Directory of Family Social Work Societies, both as the correspondent for Toronto and the forwarding centre for Ontario. Last year we had ninety-five "out of town" enquiries. We also had many letters regarding correspondents in different places which are not counted except in the day's work. Thirty-two of these 95 were sent to other places for investigation. We have built up quite a list of correspondents. We appreciate very much the valuable assistance of Children's Aid Society agents, ministers and many other kind friends, who have made it possible for us to do this part of our work. (For the investigations in the city, we are asked to do many things—establish legal residence; verify birth, death and marriage certificates; meet trains; secure previous work records; endeavour to secure the co-operation of relatives in carrying out plans for a family; help trace deserting husbands, etc. This work is most interesting, and in many cases we have been able to render valuable service. It also makes us more willing to ask agencies in other cities to help us out with a like service.)

It seems impossible to speak about the last year's work without saying something of the strain under which the secretaries worked. The unemployment situation was most depressing to the social worker who is honestly endeavouring to work for a better social order. The unusual amount of work necessitated by the problems presented because of the thousands of people out of work, along with this weight of depression made the winter a very trying one.

Problems Presented.

Most of the families we met presented several problems awaiting a solution. Illness in some form was found in almost 33 per cent. of the total number of families, but was, this year, brought down from first place by unemployment which occurred in 50%. Desertion was in almost the same proportion as last year—giving 11% of the total. Insufficient income was a troublesome problem and was more in evidence this year. Mental cases, shiftlessness, begging, incompetency, both domestic and industrial, bad housing, all contributed their quota. The small number of families in which intemperance was listed is significant.

Services Rendered.

The financial statement shows something of what has been done for the families referred to us. On the financial side, too, might be mentioned, extension of credit, employment obtained, and financial adjustments made so that the family was able to remain independent. There are, however, many other services rendered, either directly by us or by obtaining the co-operation of other agencies, and these are not so easily summarized. We arranged for physical treatment in 178 families and legal aid in 125. Institutional care was provided when this was necessary; children were placed or boarded; transportation was arranged; and family and church ties were strengthened.

Our work is non-denominational in character, but instead of it being said that we have no religion, it would be more nearly true to say that we embrace all religions. We are able to find a common footing in our efforts for the community, not only in breaking down the outward limitations that bind whole groups of men, but, also, in that further step, where we endeavour to set the individual free from inner limitations.

There have been many words of praise, and some attacks of criticism. Very often the criticism was just and this kind of criticism we crave. No one realizes her failures more keenly than the secretary who has experienced them. We trust that another winter will not be so strenuous, but the lessons learned during the last year, have, we hope, made us more able to meet any situation in which we may find ourselves.

The Provincial Board of Health of Ontario

COMMUNICABLE DISEASES REPORTED BY LOCAL BOARDS OF HEALTH FOR THE MONTH OF JUNE, 1921.

COMPARATIVE TABLE.

Diseases.	1921 Cases	1921 Deaths	1920 Cases	1920 Deaths
Small-pox	170	2	349	0
Scarlet Fever	289	6	371	12
Diphtheria	371	20	342	45
Measles	390	2	3,613	22
Whooping Cough	194	7	151	15
Typhoid	29	5	31	12
Tuberculosis	220	x105	220	184
Infantile Paralysis	....	..	2	1
Cerebro-Spinal Meningitis	9	9	9	9
Influenza and Pneumonia	2	2	49	39
Primary Pneumonia	....	126	....	260
	1,674	284	5,137	599

x Only about 60 per cent. of the deaths from Tuberculosis are reported this month.

VENEREAL DISEASES REPORTED BY MEDICAL OFFICERS OF HEALTH.

	June 1921 Cases.	June 1920 Cases
Syphilis	112	169
Gonorrhoea	155	183
Chancroid	3	4

The decrease is largely due to Hamilton failing to report for two weeks and Toronto for one week.

SMALL-POX REPORTED BY LOCAL BOARDS OF HEALTH FOR THE MONTH OF JUNE, 1921.

County.	Municipality	Cases	Deaths
Algoma	Nesterville	2	1
	Korah	2	...
Brant	Brantford	2	...
Bruce	Paisley	1	...
Carleton	Ottawa	48	...
	North Gower	1	...
	Nepean	8	...
Elgin	St. Thomas	3	...
Frontenac	Kingston	1	...
Grey	Owen Sound	9	...
Halton	Burlington	1	1
Huron	Goderich	1	...
Kenora	Kenora	1	...
Lambton	Brooke	8	...
Lennox and Addington	Denbigh A & A	1	...
Middlesex	London	5	...
	Westminster	2	...
Nipissing	Sturgeon Falls	1	...
Norfolk	Windham	2	...
	Charlotteville	3	...
	Simcoe	2	...
North'd. and Durham	Bowmanville	2	...
Oxford	South Norwich	8	...
Peel	Albion	2	...
Prescott and Russell	Vankleek Hill	2	...
Prince Edward	Hillier	5	...
Simcoe	Orillia	5	...
	Alliston	1	...
Sudbury	Sudbury	5	...
Timiskaming	Haileybury	2	...
	Dymond	1	...
Victoria	Ops	1	...
Waterloo	Kitchener	2	...
	Galt	1	...
	Waterloo Town	2	...
	Waterloo Tp.	9	...

Wellington	Guelph	1	...
	Mount Forest	1	...
Wentworth	Hamilton	3	...
York	Toronto	8	...
	Newmarket	3	...
		170	2

News Notes

Owing to the large number of accidents to children caused by automobiles, the Ontario Safety League is sending a copy of the excellent paper read by Principal Richardson of Park School, Toronto, at the recent safety convention to every teacher in the schools of Toronto for use when the schools re-open next month.

Principal Richardson, having pointed out the shocking loss of life due to carelessness, urges that a systematic course of study should be given in accident prevention, beginning with the kindergarten classes, so that there will be a gradual growth from individual safety at home, in school and on the street to a consciousness of safety in the community and the nation.

The 1921 Session of the Canadian Conference on Public Welfare will be held in Montreal during the week of September 26th. On the 29th and 30th Sessions of the Canadian Conference on Child Welfare will be held.

The Provincial Board of Health of Ontario will as usual have a valuable health exhibit at the Canadian National Exhibition commencing August 27th.

Sir Claude Hill, K.C.S.I., C.I.E., has been appointed Secretary-General of the League of Red Cross Societies and has taken up his duties. Sir Claude Hill, who resigned from the Indian Civil Service in 1920, was head of the Central Transport and Food Board for India and member of the Viceroy's Executive Council. Among other Indian appointments the new Secretary General has held that of Deputy Secretary of the Foreign Department of the Government of India. He was also Chairman of the Indian Red Cross Society and is a Knight of Grace of the Order of St. John of Jerusalem.

Dr. Gordon Bates, General Secretary of the Canadian National Council for Combating Venereal Diseases, on July 18th, spoke at a special meeting of the National Council for Combatting Venereal Diseases, held at Morley Hall, Hanover Square, London. Lord Emmott presided and the general topic of discussion was "work being

done in Canada in combating Venereal Diseases." Following the address there was an informal discussion of Canadian legislation for the control of Venereal Diseases annd particularly of notification.

Mrs. A. M. Huestis, Honorary Treasurer of the Canadian National Council for Combating Venereal Diseases, is in Europe and will probably remain for a year. During her stay Mrs. Huestis will represent the Canadian Council at meetings of the British organization. Dr. A. H. Desloges, who is in Europe for a shorter time will also act as a temporary member of the British Council representing the Canadian Council.

An attractive pamphlet entitled "1910-1920—A Review of Ten Years' Progress" has just been published by Dr. J. W. S. McCullough, Chief Medical Officer of Health for Ontario. The pamphlet gives in detail the organization of the present Provincial Board of Health, and also contains an interesting account of the early history of public health in Upper and Lower Canada. The booklet also deals comprehensively with the recent advances made in Public Health work in the province, and contrasts the up-to-date methods of today with those of ten years ago. A detailed review of the booklet will be published in the next issue of the Public Health Journal.

Plans are already under way for the 1922 Annual meeting of the Canadian Public Health Association to be held at St. John, New Brunswick. The Hon. Dr. Roberts, Minister of Health for New Brunswick, has promised that the meeting will be even more successful and instructive than the excellent meeting of 1921, held in Toronto last May. It is not too early to make arrangements to attend this convention.

Dr. John W. Shaw, Clinton, Ont., was elected President of the Ontario Health Officers' Association, and Dr. J. J. Middleton, Director, Division of Public Health Education, Provincial Board of Health, Secretary at the Annual Meeting held in Toronto last May.

Editorial

PUBLIC HEALTH NURSING.

INCLUDED in the present issue is a paper by Miss Elizabeth Russell on "Public Health Nursing in Manitoba." Aside altogether from the care which has been taken in working out the details of this paper it is of great interest in that to one unused to public health activities, and indeed even to a public health specialist interested in a particular field only it must provide great food for thought.

This full description of work carried on in Manitoba gives one some idea of the tremendous expansion of public health activities in recent years as well as the wider interpretation given to public health. The public health nurse, able and vigorous lieutenant in the health forces of the country, is doing magnificent work. Her career, arduous at times perhaps, often beset with the troubles and perplexities incident to all pioneer work is yet of such a character that it provides both satisfaction and inspiration, qualities too often lacking in the ordinary humdrum occupation of making a living. The time gradually approaches when humanity will be elevated above other human aims, when the worker who strives to make health and happiness the lot of all rather than the few will receive all honour. And high in the "honour roll" will be the public health nurse.

THE PHYSICIAN IN PARLIAMENT.

Truly the old order changeth but slowly, and despite the declaiming of H. G. Wells and other more or less astute objectors the lawyer continues to retain his traditional prestige in most of the parliaments of the world. The reason is, perhaps, not hard to find. His knowledge of laws, his experience in public affairs and the strategy of the court room, his superior general education are all factors in his success in obtaining and keeping his legislative position. Yet in spite of all, too many lawyers, law making, has decided

disadvantages. Likewise too many farmers some of our erstwhile politicians may retort with equal justice.

A legislative assembly should represent as far as possible all classes of society and all shades of opinion if legislative progress and reform are to progress surely and with sanity. The doctor, the lawyer, the educator, the merchant, the clergyman, the laborer, the manufacturer and all the rest of them should have a voice—and our educational system should be so planned that each citizen coming to the time of his full citizenship should feel that the highest honor and the fullest opportunity may lie for him in the legislative halls of his country.

There have been physicians in most legislative assemblies. Some have attained eminence. In Canada names such as that of the elder Baldwin, Tupper and other lesser lights some of whom have won cabinet rank, will be readily called to mind while in other countries Clemenceau in France, and Jamieson in South Africa, are examples of physicians who have climed the political ladder to fame. On the whole, such have been men in whom professional acumen has had little relation to political success. Politics and medicine it has often been said don't mix and more's the pity, many a good doctor has met his double Waterloo attempting to prove the falsity of this trite axiom. Many too have forsaken the one field for the other with varying success.

But to-day is the day of public health and with the problems of this new science are closely interwoven problems envolved in the fight for sane legislation dealing not only with laws for the direct control of communicable disease, but many other laws making for the general welfare of the people. The present Minister of Education for Great Britain, speaking in Toronto a few years ago, paid some attention to the opportunities in public life for the economist with medical education. Irving Fisher, his namesake at Yale, an economist without specific medical education has, in spite of this lack, performed outstanding service in the public health field. Whether the old type of medical education alone would have made him an even more efficient citizen is perhaps questionable. It would perhaps have served to accentuate his present point of view.

The physician coming daily in contact with the physical ills of humanity should develop a valuable point of view from that contact alone, and as the science of prevention develops should incline more and more to desire both to utilize his knowledge of the necessity for preventing disease and the means of organizing and using preventive machinery. This should mean the entrance of the

physician into parliament filled with the desire to work and fight for measures concerning health. Then demonstrations such as that supplied by the present energetic President of the Canadian Public Health Association as Minister of Health in New Brunswick should be fairly common. Yes, the mills of the gods grind slowly. In time their product is exceeding fine; and not the least of their products is the modern socially minded physician. Here's hoping that more of him may be found in the legislative halls of the future.

Notes on Current Literature

Which Way are we Going in Nursing?

The education of the nurses of the present and the standards and number of nurses of the future are matters of practical concern to all classes in the community. This article discusses the value of short courses in nursing. The author believes that the group reached by these courses should be called "Attendants" and not "Nurses," and that the duties and responsibilities undertaken by these "Attendants" should be restricted. (*The Survey*, June 18th, 1921, p. 409.)

Vitamines and Public Health.

Dr. Drummond, of the Department of Physiological Chemistry, University of London, England, warns against the commercial exploitation of vitamines. If people would recognize the real situation and eat more fresh vegetables, fruits, eggs and milk, they need not under ordinary circumstances, purchase expensive and possibly inefficient proprietary articles, nor worry about vitamines. Natural sources for these products abound on every hand. (*The American Journ. of Pub. Health*, July, 1921, page 593.)

Vitamines as Factors in Public Health.

Vitamines are now well recognized as a public health problem. This article reviews the present knowledge of the nature and function of these important food elements. (*The Nation's Health*, June, 1921, page 353.)

Public Health Problems in Europe.
(*Nation's Health*, June 15th, 1921, page 329.)

Economic Problems in European Health.
(*Nation's Health*, July 15th, 1921. page 398.)

Housing as it Relates to Public Health.
(*The Nation's Health*, July, 1921, page 395.)

The Nurse in Relation to Child Conservation.
(*Mother and Child*, July, 1921, page 309.)

Physical Defects of Children of Pre-School Age.
(*Mother and Child*, June, 1921, page 248.)

Planning the Child Health Station.
(*Mother and Child*, June, 1921, page 224.)

Important Facts in Building Tuberculosis Sanatoria.
(*United States Pub. Health Reports*, June, 1921, page 1371.)
Finding Tuberculosis Through Clinics.
(*American Journal of Public Health*, July, 1921, page 622.)
Mental Hygiene in Canada.

1. Nova Scotia Survey.
2. Montreal School Survey.
3. Vancouver Sub-normal Problem.

(*Canadian Journ. of Mental Hygiene*, April, 1921, pages, 1, 49 and 117.)

CANADIAN RED CROSS SOCIETY PUBLICATIONS.

1. "The Junior Red Cross" (Saskatchewan), June, 1921.
2. "The Membership Enrollment Campaign." (*The Public Health Journal*, May, 1921, p. 225.)
3. "Red Cross Health Centre"—pamphlet—Alberta Division.
4. The Shortage of Student Nurses.

LEAGUE OF RED CROSS SOCIETIES POPULAR HEALTH ARTICLES.

1. "Healthy Holiday Journeys."
2. "Dried Milk."
3. "Is 'Dip' Doomed?"

A Syphilitic Manifestation in the Nose. Harold M. Hays, M.D. American Medical Association *Journal*, Vol. 76, No. 23 June 4, 1921.

The engorged mucous membranes, covering the turbinates and the nasal septum, if such mucous membrane is not distinctly polypoid, will invariably shrink under the application of a 1 per cent. cocaine solution, to which is added a third part of a 1.1000 solution of epinephrin chlorid. If the mucous membranes do not shrink perceptibly under the application of such a solution there is in all probability a syphilitic infiltration of the mucosa. The nasal mucosa is first sprayed with the solution after which pledgets of cotton immersed in the medicament are inserted into the nose. These are removed in from five to ten minutes. If the mucosa still obstructs the nose, it is evident that there is some pathologic condition of this membrane which will not allow it to shrink, probably a syphilitic infiltration.

The author reported two cases. His concluding comments were:

A Wasserman test should be made in all cases of nasal obstruction in which the obstruction is due to a thickened mucous membrane which will not shrink under the application of cocain and epinephrin.

Report of the Chief Medical Officer of the Board of Education (Great Britain) for 1919.

Sir George Newman records a great national achievement in the betterment of children's health. Those who are working in this field in Canada can learn much of the thorough British way in which the problem is being attacked from every angle. The report is in eleven sections; those dealing with Special Schools for Defective Children, the Science of a Healthy Life and Physical Education will probably be of most interest. The suggested arrangements for the care of children who leave school to work, indicate how thoroughly in earnest are the school authorities of Great Britain to ensure national good health.—S. B. McCready.

Book Reviews

Hygiene, Dental and General. By Clair Elsmere Turner. St. Louis, C. V. Mosby Co., 1920. MacAinsh & Co., Toronto. Cloth, pp. 400, $4.00.

The rapid advances in the field of hygiene and the consequent effect on personal and community health, give to the study of this subject an importance that compels a need for accurate and up-to-date books. Professor Turner's book helps to meet this need and presents the subject in a manner suited to the requirements of students and practitioners of dentistry.

This book is essentially one of general hygiene as seen through the eyes of a dentist, but, in view of the importance of dental hygiene, this rather enhances the value of the publication to the sister professions of medicine and nursing and to those interested in school and industrial hygiene.

The first five chapters deal with physiology and relative problems such as feeble-mindedness, sex hygiene and prenatal care. The problems arising through infectious organisms are treated in the following eleven chapters. The author takes a view of these problems sufficiently wide to include public health administration, food control and the hygiene of schools and industrial plants. Professor Turner does not hesitate to quote at length from the excellent reports of the Children's Bureau of the United States Department of Labour, the pamphlets of the United States Public Health Service and of the Sanitary Engineering Section of the American Public Health Association. The incorporation of Ehrlich's side-chain theory adds to the value of the book, but a chapter dealing with insect-borne diseases and their control might well have been included in view of the importance of this subject and the romance of recent accomplishments in this branch of hygiene. The section on Essential Facts of Immunity might have been made more comprehensive if the types of experiments on which the conclusions are based, were mentioned.

The appendices deal with the control of communicable diseases and with disinfection and disinfectants.

The plan of the book is comprehensive, the facts are accurate and the style concise and readable.—Donald T. Fraser.

Practical Preventive Medicine. By Mark F. Boyd, M.D., M.S., C.P.H. Philadelphia, W. B. Saunders Co., 1920. J. F. Hartz Co., Toronto. Cloth, 352 pages, $4.50.

During the past few years there have been many valuable text books published on Preventive Medicine and Hygiene, which are of the greatest value to the professional worker in public health and to the post-graduate student. These volumes are large and do not appeal to the general practitioner, and are too expensive for the average student. These points have been realized by Professor Boyd who has endeavoured to present briefly and attractively this subject to practitioners and medical students. The book is of convenient size, containing 352 pages, with over a hundred illustrations.

The arrangement of the subject matter is excellent. In an introductory chapter, the subject is defined and the importance of "Preventable Diseases" is emphasized. Discussion of Communicable Diseases, of Deficiency Diseases and of Diseases due to Occupation naturally follows. Each of these groups of diseases is dealt with in a section, consisting of a series of chapters.

The first section dealing with Communicable Diseases presents in terse form the accepted facts regarding these diseases, grouping them according to their mode of transmission, and detailing methods of control. This section is concluded by an outline of general measures of disease control, with details of disinfection, excreta disposal, water purification and pasteurization of milk. References to publications are given at the end of each chapter which are of great value to the reader desiring further information.

Infant and Maternal Mortality is presented in a striking manner by diagrams and charts. The section on Vital Statistics is clear and concise with numerous illustrations which assist in simplyfing this subject. A chapter on Public Health Administration in the United States, outlining briefly the Federal, State and Local Government agencies forms a logical conclusion to this eminently practical and valuable book.—R. D. Defries.

Synopsis of Hygiene. By Jameson and Marchment. Philadelphia, P. Blakiston's Son & Co., 1921. Cloth, pp. 404. $4.00.

This book is one of the "Students' Synopsis Series," being specially intended for those studying for a diploma in Public Health in Great Britain. In the preface the authors point out that "those sections dealing with purely practical subjects, have been cut down

to make room for more theoretical material." The book consists of about 400 pages in 11 sections.

Communicable diseases and methods for their control are barely dealt with and are included in one section with Industrial Diseases, Notes on Animal Parasites, Hospitals and Disinfection. In contrast, Sanitary Law (England and Wales) is discussed in a section of greater length (60 pages) giving in detail the Ministry of Health Act, 1919. Similarly a large section is devoted to notes on Meteorology, Physics, Chemistry, with definitions, methods and computations.

Undoubtedly the book is one of great value to the student preparing for the diploma of Public Health examination in England. —R. D. Defries.